

CLAIMS

1. A manufacturing method of metal ion water characterized by submerging two dissimilar metals mutually different in ionization tendency (potential) in water to be treated in mutually contacting state, wherein metal ions are perpetually eluted from the metal of higher ionization tendency and/or lower electrode potential by corrosive action of oxidation-reduction reaction by local cell formation of the metal of higher ionization tendency and/or lower electrode potential for moving electrons from the metal of lower electrode potential to the metal of higher potential, in order to prevent corrosion of the metal of lower ionization tendency and/or higher electrode potential of the two dissimilar metals.

2. A water treatment method characterized by submerging two dissimilar metals mutually different in ionization tendency (potential) in water to be treated in mutually contacting state, wherein metal ions are perpetually eluted from the metal of higher ionization tendency and/or lower electrode potential by corrosive action of oxidation-reduction reaction by local cell formation of the metal of higher ionization tendency and/or lower electrode potential for moving electrons from the metal of lower electrode potential to the metal of higher potential, in order to prevent corrosion of the metal of lower ionization tendency and/or higher electrode potential of the two dissimilar metals.

3. The manufacturing method of metal ion water of claim 1 and the water treatment method of claim 2, wherein the dissolved oxygen in the water to be treated is increased.

4. A manufacturing device of metal ion water, being a manufacturing device of metal ion water used in submerged state

in water to be treated, comprising two dissimilar metals mutually different in ionization tendency (potential) in mutually contacting state, wherein metal ions are perpetually eluted from the metal of higher ionization tendency and/or lower electrode potential by corrosive action of oxidation-reduction reaction by local cell formation of the metal of higher ionization tendency and/or lower electrode potential for moving electrons from the metal of lower electrode potential to the metal of higher potential, in order to prevent corrosion of the metal of lower ionization tendency and/or higher electrode potential of the two dissimilar metals.

5. A water treatment apparatus is a water treatment apparatus used in submerged state in water to be treated, comprising two dissimilar metals mutually different in ionization tendency (potential) in mutually contacting state, wherein metal ions are perpetually eluted from the metal of higher ionization tendency and/or lower electrode potential by corrosive action of oxidation-reduction reaction by local cell formation of the metal of higher ionization tendency and/or lower electrode potential for moving electrons from the metal of lower electrode potential to the metal of higher potential, in order to prevent corrosion of the metal of lower ionization tendency and/or higher electrode potential of the two dissimilar metals.

6. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 5, wherein other metal is plated on either one metal of the two dissimilar metals, and both contact with each other.

7. The manufacturing method of metal ion water, the water

treatment method, the manufacturing device of metal ion water or the water treatment apparatus of claim 6, wherein the metal of lower ionization tendency and/or higher electrode potential is plated on the metal of higher ionization tendency and/or lower electrode potential, and both metals are adhered tightly to each other.

8. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 5, wherein other metal is adhered to either one metal of the two dissimilar metals by cladding method.

9. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 6 to 8, wherein by exposing other metal by removing multiple cutting positions by scribing or grooving either one metal adhered by plating or cladding method, many contact boundary portions of two dissimilar metals are formed.

10. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 4 to 8, wherein by cutting or blanking multiple holes penetrating through two dissimilar metals, multiple contact boundary portions of two dissimilar metals are formed in the inner side of the multiple holes, and multiple contact boundary portions of two dissimilar metals are formed.

11. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 6 to 8, wherein by processing nearly in rhombic mesh form by cutting

zigzag sections and expanding in plate material composed of two dissimilar metals.

12. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 6 to 8, wherein by forming like metal wires by cutting in a direction nearly orthogonal to the contact surfaces of two dissimilar metals, contact boundary portions of two dissimilar metals are formed at cut sections at both sides in a longitudinal direction.

13. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 6 to 8, wherein either one of the two dissimilar metals is formed like a string, and other metal is plated in part of the surface of the string metal.

14. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 5, wherein the two dissimilar metals are formed linearly, and the both linear dissimilar metals are woven or knitted in mutually adhering state.

15. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 5, wherein the two dissimilar metals are formed linearly, and either one metal of the two linear dissimilar metals is wound on the other metal to be adhered to each other.

16. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water

or the water treatment apparatus of claim 14 or 15, wherein either one metal of the two dissimilar metals formed linearly is plated on the outer side of a core member made of other material.

17. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 5, wherein either one metal of the two dissimilar metals having lower ionization tendency and/or higher electrode potential is composed of powder, particles, wire or fiber containing carbon such as carbon or graphite, and it is massively cast into other metal of higher ionization tendency and/or lower electrode potential in coexisting state, and the two dissimilar metals are adhered to each other, and

by cutting or blanking multiple holes penetrating through two dissimilar metals, multiple contact boundary portions of two dissimilar metals are formed at the inner side of multiple holes.

18. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 5, wherein either one metal of the two dissimilar metals having lower ionization tendency and/or higher electrode potential is composed of powder, particles, wire or fiber containing carbon such as carbon or graphite, and it is massively cast into other metal of higher ionization tendency and/or lower electrode potential in coexisting state, and the two dissimilar metals are adhered to each other, and

by processing nearly in rhombic mesh form by cutting zigzag sections and expanding in plate material composed of two

dissimilar metals, multiple contact boundary portions of two dissimilar metals are formed in the cut sections.

19. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 18, wherein either one metal of the two dissimilar metals having higher ionization tendency and/or lower electrode potential is formed of copper.

20. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 18, wherein either one metal of the two dissimilar metals having higher ionization tendency and/or lower electrode potential is formed of silver.

21. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 18, wherein either one metal of the two dissimilar metals having higher ionization tendency and/or lower electrode potential is formed of tin.

22. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 18, wherein either one metal of the two dissimilar metals having higher ionization tendency and/or lower electrode potential is formed of aluminum.

23. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 18, wherein either one metal of the two dissimilar metals having

higher ionization tendency and/or lower electrode potential is formed of magnesium.

24. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 18, wherein either one metal of the two dissimilar metals having higher ionization tendency and/or lower electrode potential is formed of iron.

25. The manufacturing method of metal ion water, the water treatment method, the manufacturing device of metal ion water or the water treatment apparatus of any one of claims 1 to 18, wherein either one metal of the two dissimilar metals having higher ionization tendency and/or lower electrode potential is formed of zinc.